
**WRITING A PAPER WITH
MATHWRITER[™] 2.0
A Primer**

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Ithaca, New York

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WRITING A PAPER WITH MATHWRITER™ 2.0

A Primer

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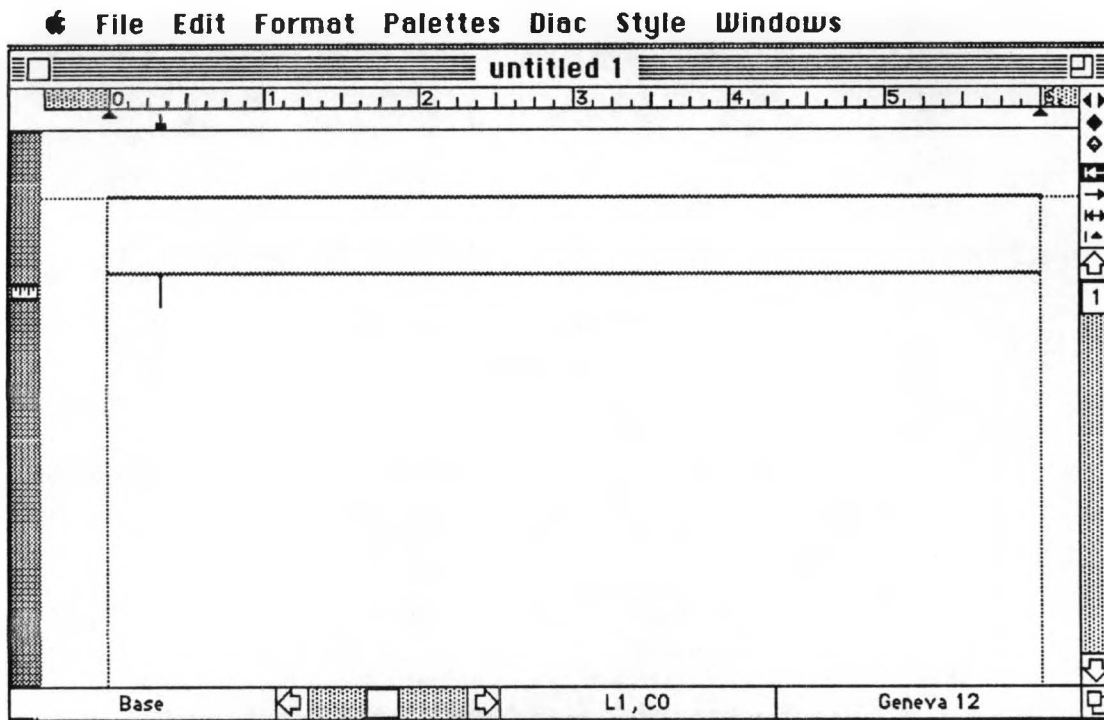
A brief introduction

MathWriter 2.0 is the first word processor that enables you to type equations as easily as text. You can write and edit a document containing equations without pasting or moving back and forth between various programs or windows. While this feature is particularly relevant to the scientist, other features of the program are quite useful to anyone.

This manual is designed to help you learn, in as little time as possible, certain basic features of *MathWriter* that apply to writing a paper, one that includes mathematical expressions. It is not intended as an exhaustive explanation of all of the features of the program. It assumes that you have some experience working with a Macintosh. If not, please refer to the user's manual that came with your computer for basic instruction in how to use the Macintosh. If you have previously used a program like WriteNow, you should have no difficulty. Many of you will be able to take the examples in this manual and extrapolate to other features of the program.

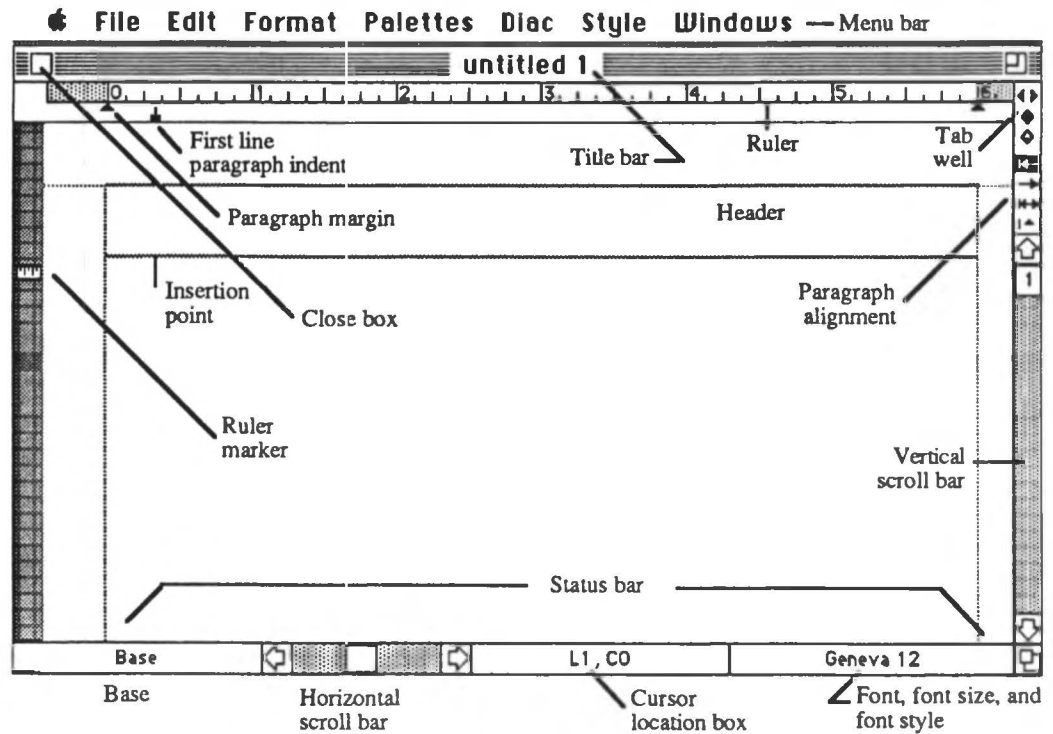
To start *MathWriter*

1. Complete the usual Macintosh start-up process.
2. Double click the *MathWriter* icon. This brings up the following *MathWriter* screen.

MathWriter screen

Notice that the screen looks very much like that of a standard Macintosh word processor. Now look at a picture of the screen with many of the parts labeled.

4 Writing a Paper With MathWriter




Screen sections


Menu bar	Shows the <i>MathWriter</i> menus.
Close box	Closes the window.
First line paragraph indent	Indents first line of each paragraph.
Paragraph margin markers	Indicate the left and right margins of text
Title bar	Shows the file name, "untitled 1".
Ruler	Shows tabs and paragraph indentions.
Header	Shows the space where you type headers.
Insertion point	Shows point of text entry.
Ruler marker	Indicates ruler changes. Each time you press <i>return</i> , you create a new paragraph that inherits the ruler of the preceding paragraph unless you create a new ruler.
Status bar	Contains Base, Scroll bar, Cursor location box, and Font at insertion point.

Base	Tells the position of the insertion point within a built-up mathematical expression.
Horizontal scroll bar	Scrolls text horizontally.
Cursor Location Box	Tells the line and character position of the blinking insertion point.
Font, font size, font style	Identifies font, font size, and font style.
Vertical scroll bar	Scrolls text vertically.
Paragraph alignment	Aligns paragraphs flush with left or right margins, centers paragraphs, or aligns them flush with both margins.
Tab well	Supplies a left align ►, right align ◄, center align ◆, and decimal align ◇ tab.

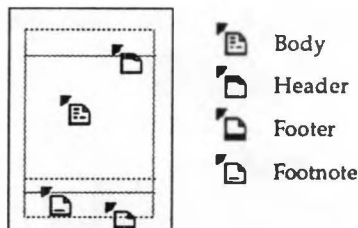
The Cursor

MathWriter has a variety of cursors, only two of which are discussed here. Below are the two insertion point cursors.

I-beam  Enters text.

Split I-beam..  Edits mathematical expressions.

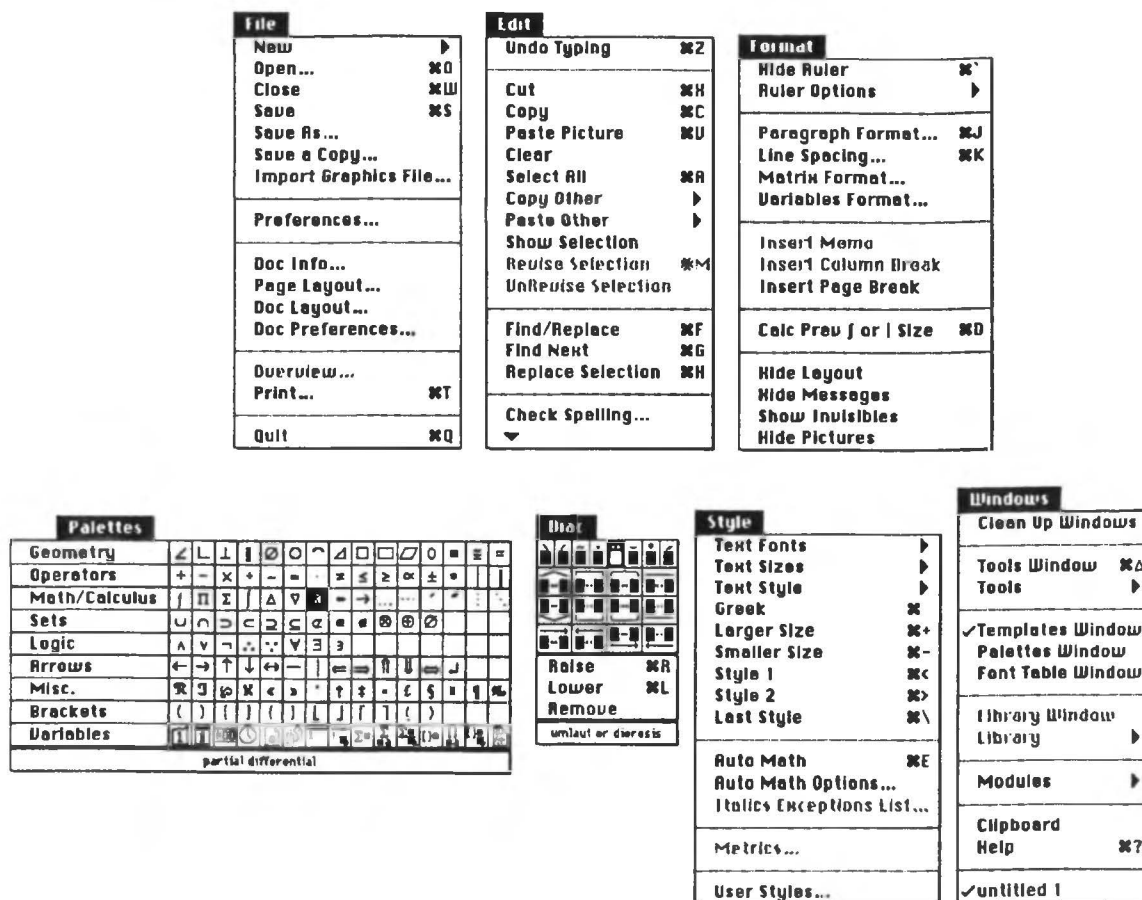
Since *MathWriter* lets you edit the header, footer, and footnote regions of a document without opening a separate window, you need to be able to tell when you have left the main body of text and entered one of these regions. Below are the cursors that change to identify each region as you move from one to another.



The Menus

Below is an illustration of all of the menus in *MathWriter*. They provide many different options, but in this manual we refer only to those commands in each menu that you would need to write a simple paper containing simple mathematical symbols. Those shown dimmed are not available in the Educational Version of *MathWriter*.

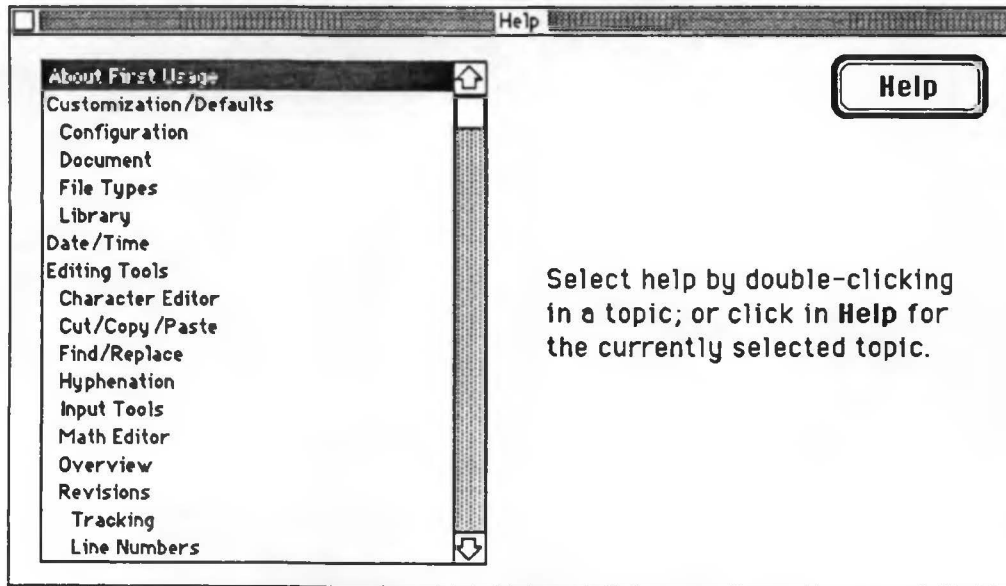
6 Writing a Paper With MathWriter







Online Help

If, as you proceed, you need more information:

1. Pull down the Windows menu to Help and release the mouse. That opens the following window.



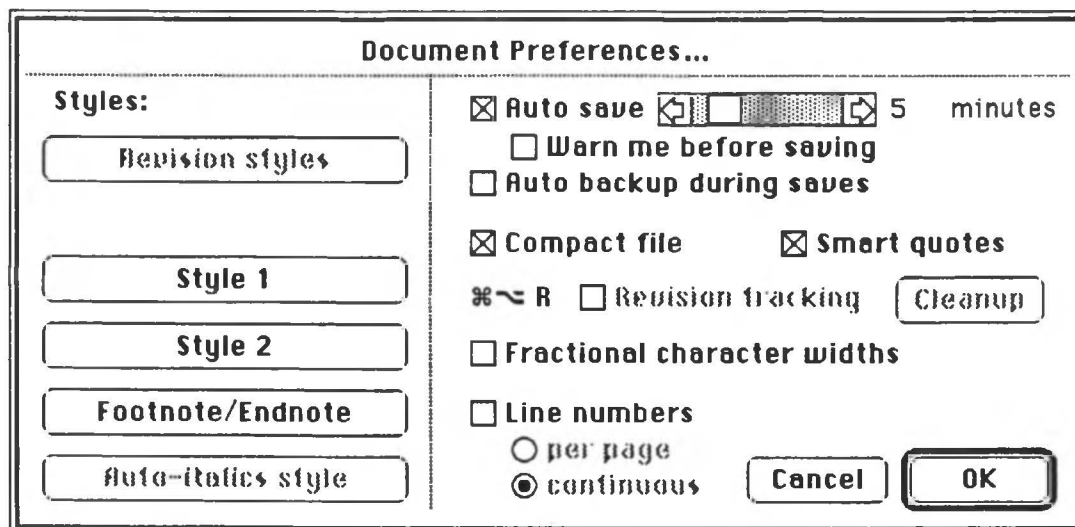
2. Scroll in the vertical scroll box to find the topic you want.
3. Double-click on that topic or click on a topic and then click the Help button to receive information about the topic. That changes the button  to  and provides two sets of arrows   for paging.
4. Click on the arrows to scroll the pages in the information window.
5. Click Topics to return to the original list of Help topics.
6. Click the tiny, square box in the upper left corner of the window to close the window.

Writing a paper

Auto save

We place Auto save first because we strongly recommend that you save your work at intervals in the event of a power failure or some other unforeseen accident. If you tend to forget to save your work often, this command lets MathWriter assume that task for you. We discuss the regular saving procedure later.

1. Pull down the File menu to Doc Preferences... and release the mouse. This opens the Document Preferences... window.



2. Click in the box beside Auto save.
3. Scroll in the scroll box to the right of Auto save to set the time intervals at which you want *MathWriter* to save your document.
4. Click in the box beside Warn me before saving if you want *MathWriter* to give you a warning before it saves your document.
5. Click in the box beside Auto backup during saves if you want *MathWriter* to make a backup of your current file in addition to saving the current file. This saves the two most recent copies of your file.
6. Click OK to accept your choices or Cancel to reject them.

Screen refresh

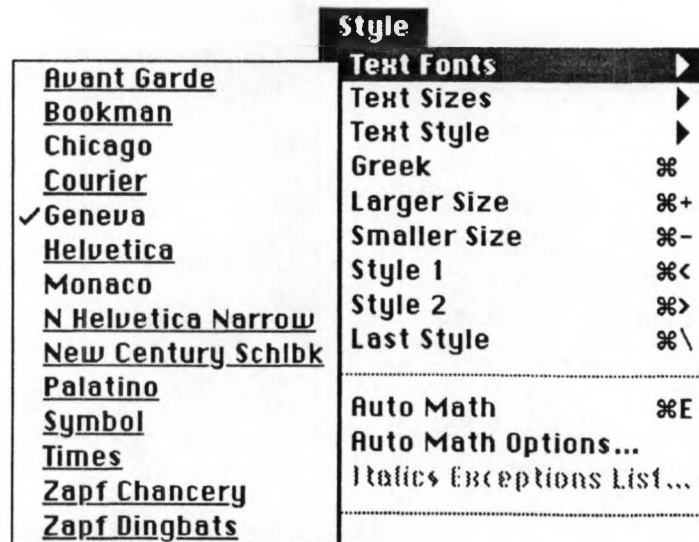
If at any time while you are typing, the screen does not clean up as you want and you need to redraw it, press $\%$ option Z.

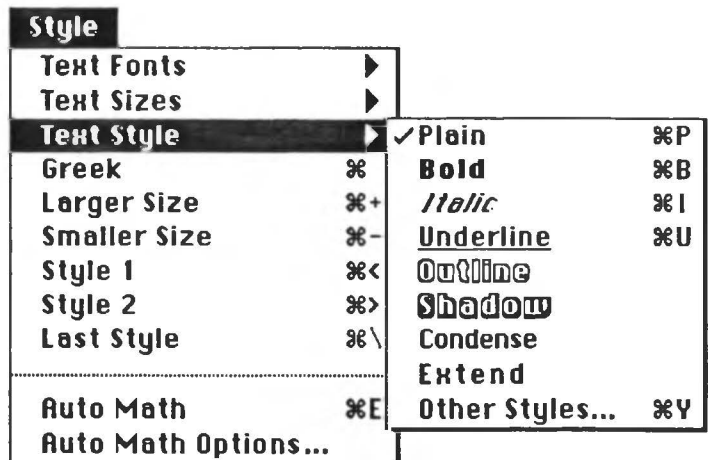
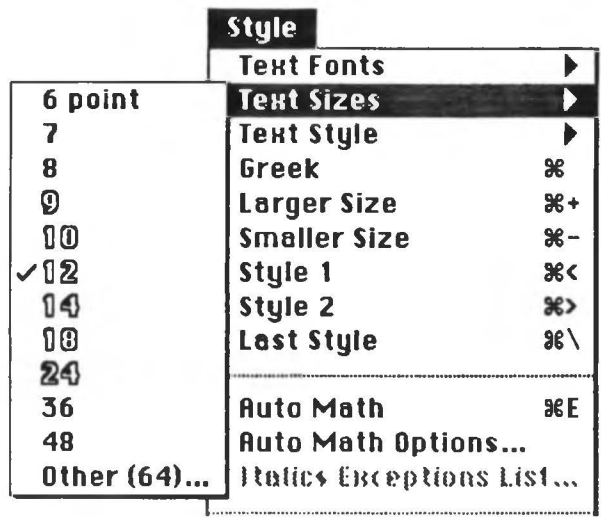
Entering text

Let's assume your assignment is to write a twenty page paper about Ithaca, the title of which is "Ithaca, New York."

Fonts

MathWriter offers a variety of fonts, font sizes, and font styles. These are located on the Style menu and are easily changed. However, we strongly recommend that you choose the font for your paper before you type the paper, rather than afterwards. Fonts vary in size and in the amount of space they require; changing fonts after you type the paper can change the spacing you have set up. The default font is Geneva, the size is 12 point, and the style is Plain. These appear checked on the following Style submenu.





1. Type, "Ithaca, New York".

Now suppose you wanted to change the font of the title, make it bigger, and make it boldface. Use the following procedure to change the font in the title or any place in the document.

Selecting a new font

1. Highlight the title by placing the cursor at the beginning or end of the text, holding the mouse button down, dragging the cursor across the text, and releasing the mouse or by clicking the mouse three times in the line of text to highlight the entire line. Warning: If you highlight text and press return, the highlighted text disappears.

2. With text still selected, pull down the Style menu to Text Fonts, drag to N. Helvetica Narrow in the pop-out window, and release the mouse. The title should read:

Ithaca, New York

If you press the option key and then pull down the Style menu to Text Fonts, the font name appears in its own style to help you decide which font you want to use. Note that those fonts that appear underlined in the Text Fonts pop-out menu are built-in LaserWriter fonts. If you intend to print your document on a LaserWriter, we strongly recommend that you use LaserWriter fonts.

Changing font size

1. With the title still highlighted, pull down the Style menu to Text Sizes, drag to 18 in the pop-out window, and release the mouse. The title should read:

Ithaca, New York

2. Pull down the Style menu to Larger Size and release the mouse. The font size increases to 24 point.

3. Pull down the Style menu to Smaller Size and release the mouse. The font returns to 18 point.

Changing font style

1. Pull down the Style menu again to Text Styles and select Bold on the pop-out menu. The title should read:

Ithaca, New York

2. To remove the bold attribute, with the title highlighted, click Bold again or click Plain. Plain removes any combination of selected style attributes.

3. Click the mouse in the document outside the title to undo the highlighting.

4. To return to the original font, size, and style, pull down the Style menu to Text font and select Geneva, to Text Size and select 12, and to Text Style and select Plain. Notice the symbols on the Text Style pop-out menu after the words Plain, Bold, Italic, and Underline. They look like this: **⌘ P**, **⌘ B**, **⌘ I**, and **⌘ U**. These are keyboard equivalents for those four font styles, and you can use them to change the font style of a portion of text. To italicize the title of your paper using the keyboard rather than the mouse:


1. Highlight the title.

2. Press $\text{⌘} I$. Now your title should look like this:




Ithaca, New York

3. Press $\text{⌘} P$ to change text to Plain. Later we will tell you how to use Style 1 and Style 2 found on the Style menu.

Aligning text

1. Highlight the title by pressing and dragging the mouse over the title.
2. Click the  symbol in the Paragraph alignment box in the upper right corner of the screen to center the title.

Ithaca, New York


3. Click at the end of the title to undo the highlighting.
4. Press return and click the  symbol in the paragraph alignment section of the screen to move the blinking insertion point to the left of the screen and begin typing the main body of text. The two other paragraph alignment symbols  and  align text on the right margin or on both margins simultaneously by adding spacing between words.

Typing text

1. Type the following two paragraphs from Morris Bishop's book, *A History of Cornell* (Bishop 1962, 1):

"A contemplative traveler, journeying to Ithaca a century ago by the road along Fall Creek, might well pause at the hilltop above the valley. . .

"Northwestward he looks to Cayuga Lake, disappearing to the horizon, taking its color for the day, gray to flashing green-blue."

2. Press the *delete* key if you make a mistake and want to delete a letter.
3. If you want to add a character, place the blinking insertion point in the text where you want the character and type the character.
4. Notice that *MathWriter* automatically indents the first line of each paragraph. When you reach the end of a line, it automatically moves the insertion point to the next line. You only press *return* when you want to start a new paragraph. If you want to remove the first line indent, place the cursor on the first line indent symbol  on the ruler, drag it to the 0 on the left end of the ruler, and release the mouse.

Selecting or highlighting text

This is very important because the cardinal rule of Macintosh is to select the portion of text you want to affect before giving a command. *MathWriter*

offers several ways of selecting or highlighting text. Selected text is white on black.

Dragging the mouse

1. Click with the mouse at the beginning of the last line of the text you typed, "taking its color for the day, gray to flashing green-blue."
2. Press and hold the mouse button.
3. Drag to the end of that line.
4. Release the mouse button. The text is selected.

Selecting a single word

- ◆ Double click on the word "flashing." That selects the word.

Selecting a single line

- ◆ Triple click on the line "taking its color for the day, gray to flashing green-blue." That selects the entire line.

Selecting a large block of text

1. Click at the beginning of the two paragraphs you typed about Ithaca.
2. Hold down the *shift* key.
3. Click at the end of the two paragraphs. That selects the entire portion of text between the two clicks.

Selecting the entire file

- ◆ Pull down the Edit menu to Select All and release. That selects the entire file currently open on the screen.

Undoing an operation

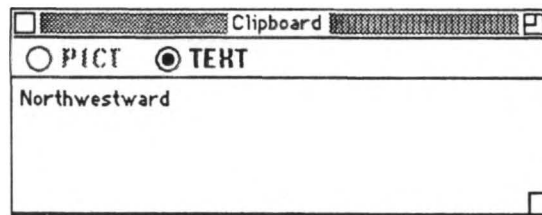
The Undo command on the Edit menu in *MathWriter* applies to the immediate past command for most operations as well as to editing. Its name changes to identify the available operation. Be careful when you use it with the Replace All command in Find/Replace on the Edit menu. In fact, any time you use Undo in a global fashion, we recommend that you save a copy of your text first. We will explain how to use Save a Copy on the File menu later.

1. Highlight the word "flashing" in the last sentence of the text you typed.
2. Press $\text{⌘} I$ to italicize that word.
3. Pull down the Edit menu to the first command which now reads Undo Style Change and click on that command. The word "flashing" returns to plain text.

Cutting and pasting text

The Cut command on the Edit menu cuts selected text from a document and places it on the Clipboard, a temporary storage location.

1. Select the word "Northwestward."
2. Pull down the Edit menu to Cut and click the mouse on that command to remove the selected word from the paragraph and transfer it to the Clipboard.
3. To view the Clipboard, pull down the Windows menu to Clipboard and release the mouse. A picture of the Clipboard containing the cut text appears on the screen as shown below. When you cut a second portion of text, the second portion will replace the first portion on the Clipboard.



4. Click the small box in the upper left corner of the Clipboard to close that window.
5. Place the blinking insertion point between the words "looks" and "to" in the sentence from which you cut the word "Northwestward."
6. Pull down the Edit menu to Paste Text and release.

After you capitalize the "h" in the word "He" and make the "n" in the word "northwestward" lower case, your text should read:

"A contemplative traveler, journeying to Ithaca a century ago by the road along Fall Creek, might well pause at the hilltop above the valley.

He looks northwestward to Cayuga Lake, disappearing to the horizon, taking its color for the day, gray to flashing green-blue."

Copying text

- ◆ Pull down the **Edit menu** to **Copy** to place a copy of selected text on the Clipboard without removing it from the document.

Clearing text

- ◆ Pull down the **Edit menu** to **Clear** to clear selected text from the document without saving a copy on the Clipboard. Cleared text is no longer accessible unless you pull down the **Edit menu** to **Undo Clear** as your next command.

Copy Other and Paste Other

- ◆ Pull down the **Edit menu** to **Copy Other** and **Paste Other** in order to copy and paste such things as a particular ruler or format. Pull down the **Edit menu** to **Copy Other** and select **Copy as Picture** to copy a mathematical expression as a picture in order to paste it into another application such as a layout program.

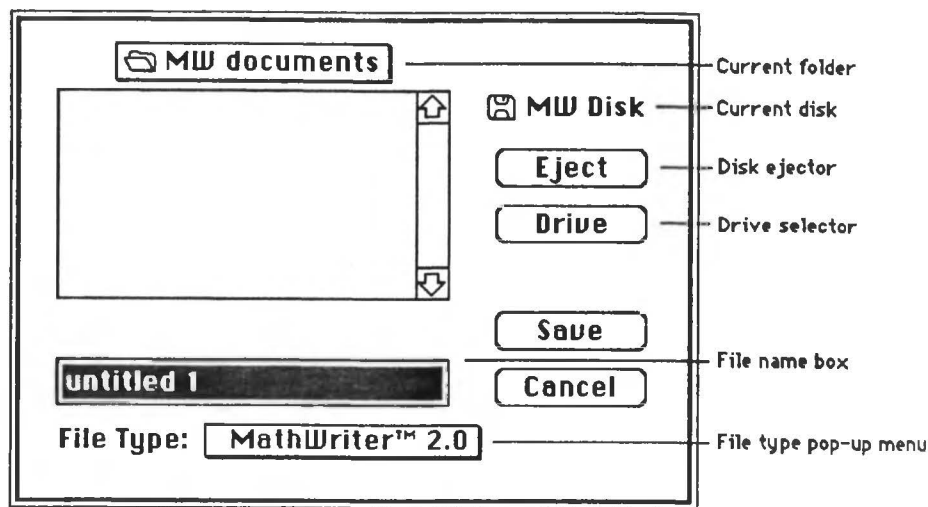
Show Selection

- ◆ Pull down the **Edit menu** to **Show Selection**, and *MathWriter* scrolls to the place in the document where the blinking insertion point is located. This is a short cut to return to the place you were editing after you have scrolled to another part of the document.

Saving a document

To save a document

1. Pull down the **File menu** to **Save**. This opens a window similar to the following window:



2. Type "Ithaca, NY" in the File name box to assign a name to your file. Names can include spaces, but not colons.

3. Click Drive to select the drive and disk to which you want to save your file.

4. Click on the Current folder name and pull down to open a pop-up menu that give you access to a hierarchy of folders where you click on the name of the folder in which you want to save your file.

5. Click Save to accept your choices or Cancel to reject them. That saves your file under the name you have assigned it. Notice that the name of the file in the title bar at the top of the screen has now changed from "untitled 1" to "Ithaca, NY."

Save as... and Save a Copy

Save as... on the File menu lets you save your file under a different name without changing the name of the current file and makes the new file the active one. Save a Copy... you lets you make a copy of your file under a different name without making the new file the active one.

Printing

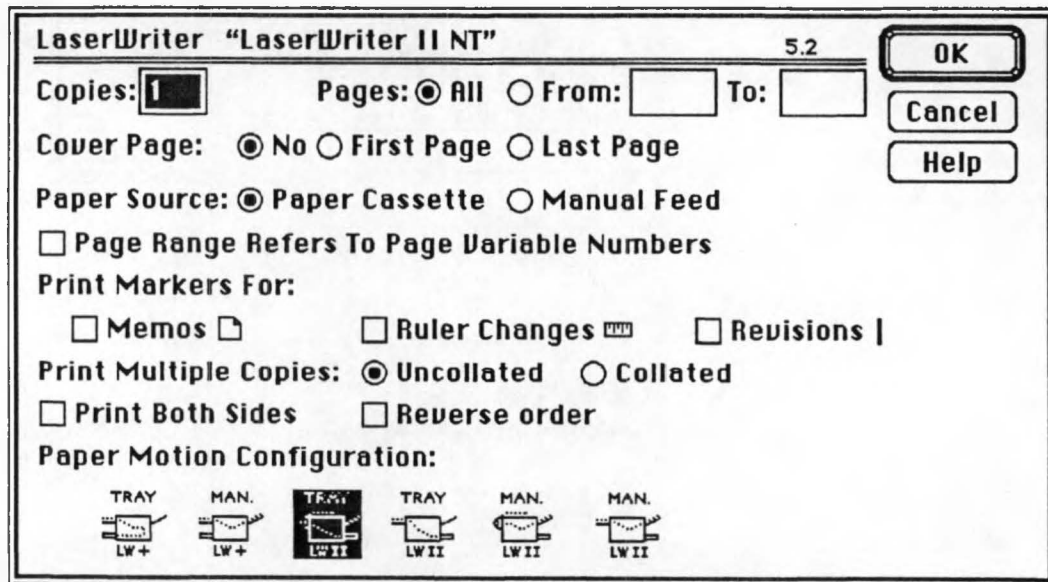
Generally, we recommend that you select the type of printer, LaserWriter or ImageWriter, before you type a document. You may have to reformat the document if it is set up for one and you try to print it on the other. Select the printer by pulling down the Apple menu to Chooser and clicking LaserWriter or ImageWriter. Refer to your Macintosh manual if you do not know how to do this.

To reformat a document:

- ◆ Pull down the File menu to Page Layout and click on Page Setup. You may need to scroll through your document to make sure reformatting did not change such things as tab spacing.

To print a document:

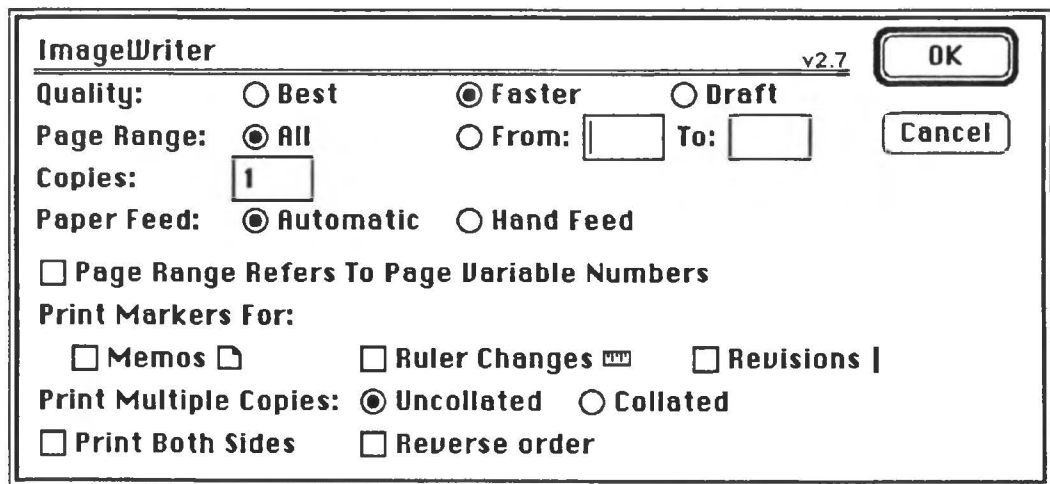
1. Pull down the File menu to Print and release the mouse. This opens one of the following windows. First, let's discuss the LaserWriter window.



2. In the box beside Copies: type the number of copies you want to print.

3. Notice that the button beside All is currently clicked, which means the printer will print the entire document. If you want to print only a few pages, click the button beside From: and type the page numbers you want in the rectangles beside From: and To:. To print a single page, supply the same page number in the From: and To: boxes.

4. Click OK to accept your choices or Cancel if you do not want to print your document.



The ImageWriter v2.7 dialog box is shown. It has a title bar with the text 'ImageWriter' and 'v2.7'. There are 'OK' and 'Cancel' buttons in the top right corner. The dialog contains several settings: 'Quality' with radio buttons for 'Best', 'Faster' (selected), and 'Draft'; 'Page Range' with a radio button for 'All' (selected) and two empty boxes for 'From:' and 'To:'; 'Copies' with a text box containing the number '1'; 'Paper Feed' with radio buttons for 'Automatic' (selected) and 'Hand Feed'; a checkbox for 'Page Range Refers To Page Variable Numbers'; a section 'Print Markers For:' with checkboxes for 'Memos', 'Ruler Changes', and 'Revisions'; 'Print Multiple Copies' with radio buttons for 'Uncollated' (selected) and 'Collated'; and checkboxes for 'Print Both Sides' and 'Reverse order'.

ImageWriter v2.7 **OK** **Cancel**

Quality: ☐ Best ☒ **Faster** ☐ Draft

Page Range: ☒ All ☐ From: To:

Copies:

Paper Feed: ☒ Automatic ☐ Hand Feed

☐ Page Range Refers To Page Variable Numbers

Print Markers For:

☐ Memos ☐ Ruler Changes ☐ Revisions

Print Multiple Copies: ☒ Uncollated ☐ Collated

☐ Print Both Sides ☐ Reverse order

If you are printing with the ImageWriter:

1. Choose the quality print you want, Best, Faster, or Draft. Best is slowest, and its dots most dense. Faster is like Best, but less dense. Draft is fastest, but loses the character formatting information.
2. Notice that the button beside All is currently clicked, which means the printer will print the entire document. If you want to print only a few pages, click the button beside From: and type the page numbers you want in the rectangles beside From: and To:.
3. Click OK to accept your choices or Cancel if you do not want to print your document.

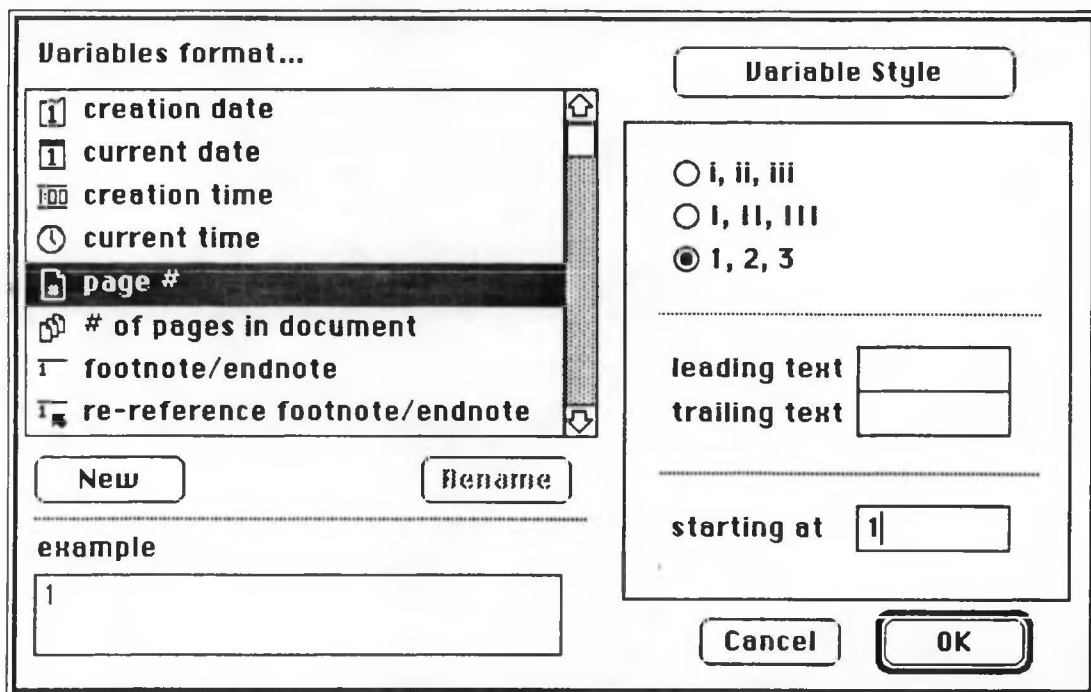
Formatting a document

Page Numbering

You can place page numbers in the header or the footer.

To format page numbering:

1. Pull down the Format menu to Variables Format... and release the mouse. This opens the Variables Format window. Note that three dots after a command indicates that releasing the mouse on that command requires additional information to complete the command and opens another window in which you can supply that information.





2. Click the mouse on **page #**. Notice that the button beside the Arabic numerals 1, 2, 3 has already been selected. The Example box in the lower left portion of the window illustrates the way the number will appear in your text. You can choose Roman numerals instead if you want.

3. Type "Page" followed by a space in the box beside Leading Text if you want the word "Page" to precede the page number.

4. Type "of " in the box beside Trailing Text if you want to print the total number of pages, for example, page 2 of 20.

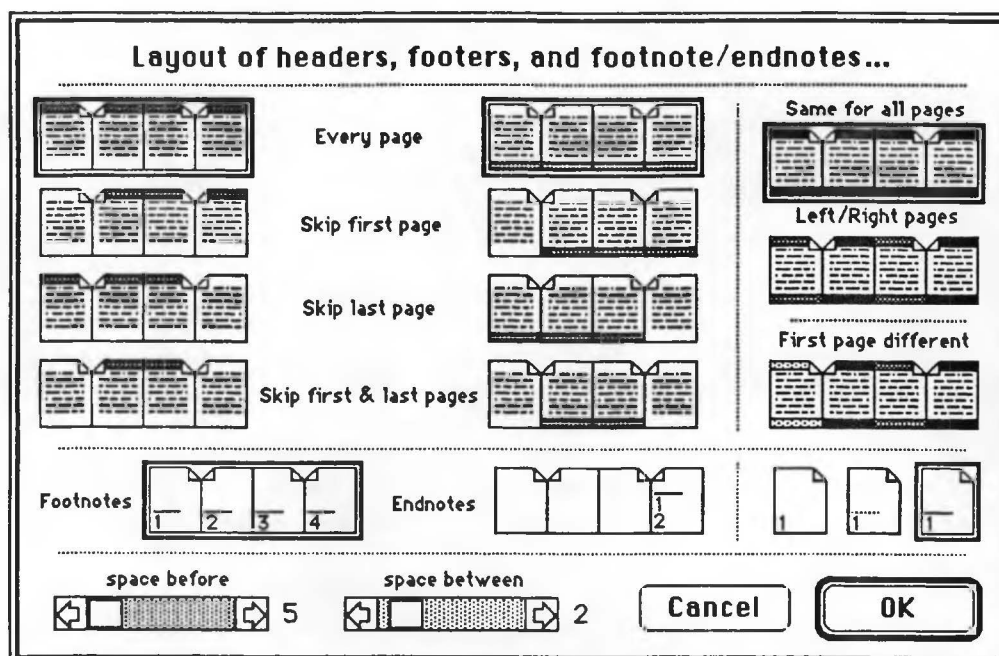
5. Look at the Example box to verify that the page numbering looks the way you want.
6. Notice that the Starting box contains the number 1. That means that page numbering will begin with the number 1. If you type "4" in that box, the first page of your paper will be numbered 4.
7. Click OK to accept your choices or Cancel to reject them.

To place page numbers in the document:

1. Click in the Header of your paper on the screen where you want page numbers to appear in the Header. Click in the Footer if you want them in the Footer. The Ruler now applies to the header and can be used to format the header just as you used it in the body of the document. Warning: If the blinking insertion point is not in the Header or Footer of your paper, the page number symbol on the Palettes menu will be dimmed and unresponsive.
2. Pull down the Palettes menu to Variables, drag to the  symbol, and release the mouse. Notice that the name "page #" appears in the bottom row of the Palettes window when you drag to the page number symbol. When you release the mouse, "Page 1 of" appears in the Header at the position of the blinking insertion point. Place the # of page in document icon  from the Palettes menu after "Page 1 of." Now MathWriter numbers the pages of your document, keeping track of the total number of pages.

To skip the first page and begin page numbering on the second page:

1. Pull down the File menu to Doc Layout... . That opens the following window.




2. Click on the set of pictures illustrating headers, the ones beside the words "Skip first page."

3. Click OK to accept your choice, and the window disappears. Notice that the header on the first page of your paper is gone; but when you type to page two, the header will say, "Page 2 of 2."

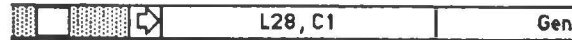
Footnote/Endnotes

MathWriter gives you an easy way to insert footnotes, reserves space for them, and keeps track of the numbering for you. To create a footnote or endnote at the end of the two paragraphs about Ithaca:

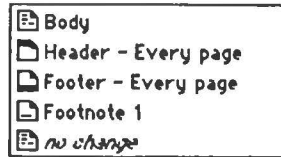
1. Place the blinking insertion point at the end of the second paragraph after the period after the word "green-blue."

2. Pull down the Palettes menu to the bottom row and click on the footnote icon . This places the number 1 in your text at the insertion point and creates a footnote region also containing a number 1 at the bottom of the current page of your document. You can move the cursor into the footnote region and from the footnote region back into the document in two ways, by scrolling or by using the cursor location box. Let's try the latter first.

3. Click on the cursor location box



in the status bar at the bottom of the screen. The following pop-up menu appears.



4. Drag to Footnote 1 to move the blinking insertion point into the footnote region and to the right of the number 1.

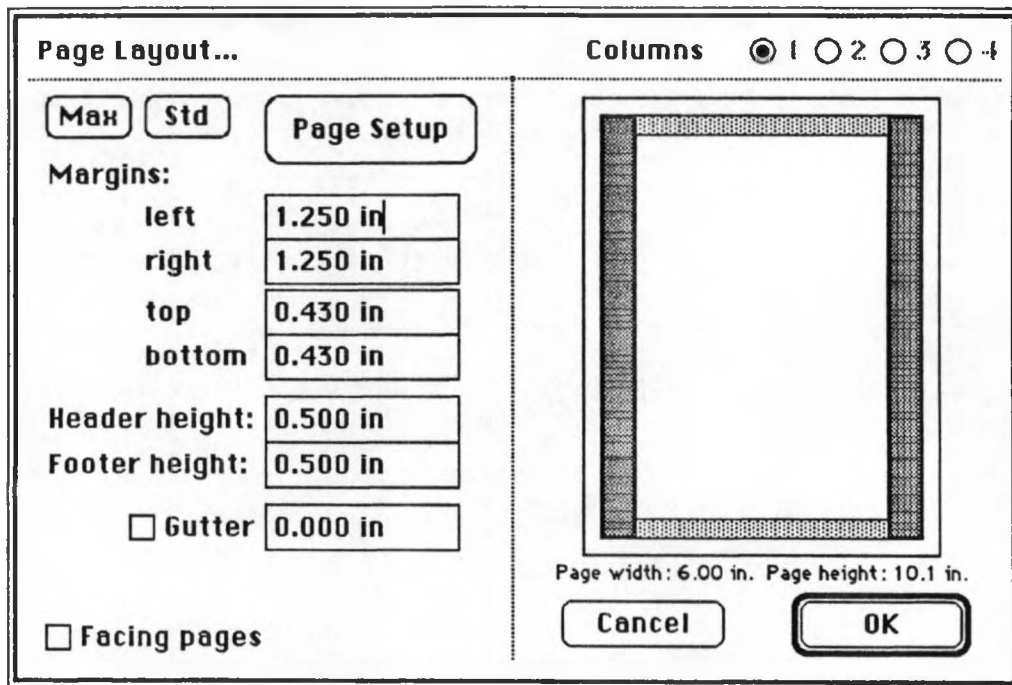
5. Type the footnote contents, "Morris Bishop. *A History of Cornell*. (Ithaca, New York, 1962), 1."

6. Click again on the cursor location box in the status bar to open the pop-up menu and drag to Body to return to the body of your document. You can scroll from the body of text to the footnote and vice versa if you do not want to use the cursor location box, but using the cursor location box is more efficient. Notice that you can enter and modify text directly in the footnote. The cursor icon changes when you cross the boundary between the footnote and the body of the document.

Sizing margins

With *MathWriter* you can change the margins and the header and footer height.

Pull down the File menu to Page Layout and release. This opens the Page Layout... window.



2. Locate the word "Margins:" and in the box beside the word "left" change 1.250 to 2.250 without disturbing the abbreviation for inch. Notice the change in the size of the left margin in the illustration of a page at the right.

3. Change 0.500 to 1.500 in the box beside Header height.





4. Click OK to accept your changes or Cancel to reject them.

Paragraph spacing

You can set the spacing between paragraphs and avoid having to press *return* several times to get the desired space between paragraphs.

1. Pull down the Format menu to Paragraph Format... and release the mouse. That opens the following window.

Paragraph format...

Spacing		Attributes
Before ¶	 0	<input type="checkbox"/> Link to next ¶
After ¶	 0	<input type="checkbox"/> Column break before
		<input type="checkbox"/> Page break before
		<input type="checkbox"/> Can't split over page break
Borders		
	Whitespace  6	
Click above for thickness and pattern		<input type="button" value="Cancel"/> <input type="button" value="OK"/>

2. Scroll the two horizontal scroll bars following the words "Before" and "After" to set the spacing between paragraphs in pixel units. You can later adjust spacing between paragraphs quickly and easily by selecting the paragraphs and adjusting the value here.


Setting line spacing


Because equations in a line of text demand sophisticated variations in the spacing between lines, *MathWriter* offers a variety of line spacings.


1. Pull down the Format menu to Line Spacing and release the mouse. This opens the Line spacing... window.

Line spacing...

☐ Automatic
☒ Mostly fixed
☐ Fixed

Fixed ascent  9

Fixed descent + leading  3

Displayed equation adjustment  6

Simple text line (24 pt)

Complex math line

$$\sum_{k=1}^{\infty} \frac{(-1)^{k+1}}{\ln(k+1)}$$

2. Click the button beside Automatic, and *MathWriter* automatically adjusts the line spacing to accommodate the nonuniform height of mathematical equations. That means that the space between lines will become as large as necessary to accommodate an inline mathematical expression such as a fraction. We suggest that you use Automatic when you are writing mathematics. If you click Fixed, the program assures constant line spacing even if some characters extend into the space between the lines. Notice that the Single, 1-1/2, Double options become available when you click Mostly fixed or Fixed.

3. Click Single for a single-spaced document, 1-1/2 for one-and-one-half-spaced, and Double for double-spaced.

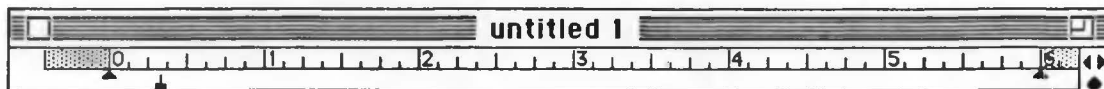
4. Click OK to accept your choices or Cancel to reject them.

The ruler

MathWriter is organized on the basis of paragraphs. Each time you press *return* you create a new paragraph. When you press *return* to create a new paragraph, *MathWriter* copies the current ruler, unchanged, to the new paragraph as the default ruler. If you want to change the formatting of a paragraph, place the insertion point within that paragraph to select it and make the changes you want on the ruler that appears at the top of your document.

Hide ruler

- ◆ Pull down the Format menu to Hide Ruler and release the mouse if you do not want the ruler to be visible on the screen. Click on Show Ruler, now replacing Hide Ruler, to make the ruler visible again.

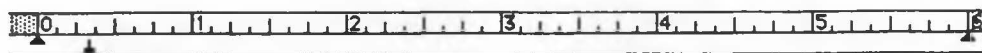


Inches or centimeters

To change the ruler units from inches to centimeters:

1. Pull down the Format menu to Ruler Options.
2. Drag to Centimeters on the pop-out menu and release.

Paragraph margins



To change the margins of a paragraph:

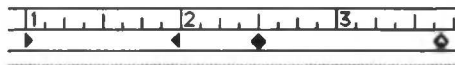
1. Drag the paragraph margin markers ▲ on the ruler to the desired position and release them.
2. Drag them back to their original positions, 0 and 6, to return to the original margins.

Indentions

The ruler contains a first line indent marker ▴ that automatically indents the first line of each paragraph.

1. Click on the first line indent marker and drag it to the number 1 on the ruler.
2. Type two full lines of text. Notice that the first line is indented one inch.
3. Press *return* and drag the first line indent marker to the 1/2 inch point on the ruler. The next line is indented 1/2 inch.

Tabs



Four types of tabs are available to align text horizontally - left align ▸, right align ◀, center align ◆, and decimal align ◆.

1. Drag the right align tab ◀ from the tab well in the upper right corner of the screen to the three inch mark on the ruler, release it, and press *return*.
2. Press the *tab* key and begin typing. Text advances to the left keeping the right end anchored.
3. Drag the right align tab back to the tab well and release it to remove it from the ruler. The left align tab works the same way, but anchors text on the left.
4. Drag the center align tab ◆ to the three inch mark on the ruler and release it.
5. Assuming the insertion point is to the left of the tab, press the *tab* key and begin typing. Text advances to the left and right, keeping the center anchored on the tab.
6. Place a decimal tab ◆ on the ruler at the three inch mark.

7. Press the *tab* key.

8. Type the equation " $x = 546.3$." Notice that the decimal point stays at the three inch point on the ruler.


Tab rubber band feature


MathWriter tabs have a rubber band feature that lets you align them exactly where you want them relative to the text.

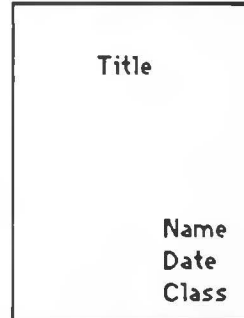
1. Drag a tab from the Tab well into your text.

2. Release the mouse button and watch the tab pop up into the ruler. To remove a tab from the ruler, you must drag it off the right end of the ruler because of the existence of the rubber band feature.

Setting tabs for a title page

1. Type the title of your paper, "Ithaca, NY," highlight it, and click Center aligned  in the paragraph alignment box.

2. Press *return* and click Left aligned  in the paragraph alignment box. Then let's assume you want to put your name, the date, and the name of the class in the lower right corner.



3. Drag a left align  tab from the tab well and position it at the four and a half mark on the ruler.

4. Press *return* until you have reached the vertical location you want to type your name.

5. Press *tab* and type your name.

6. Press *return*, press *tab*, and then type the date.

7. Press *return*, press *tab*, and then type the class. That should complete the title page.

Inserting a page break

- ◆ Place the blinking insertion point immediately before the first line of the paragraph you want at the top of the next page and pull down the Format menu to Insert Page Break. That forces text to move to the next page. To remove a page break, you must place the blinking insertion point at the beginning of the first word on the second page and press *delete*.

Show and Hide

The last four items on the Format menu toggle between Show and Hide.

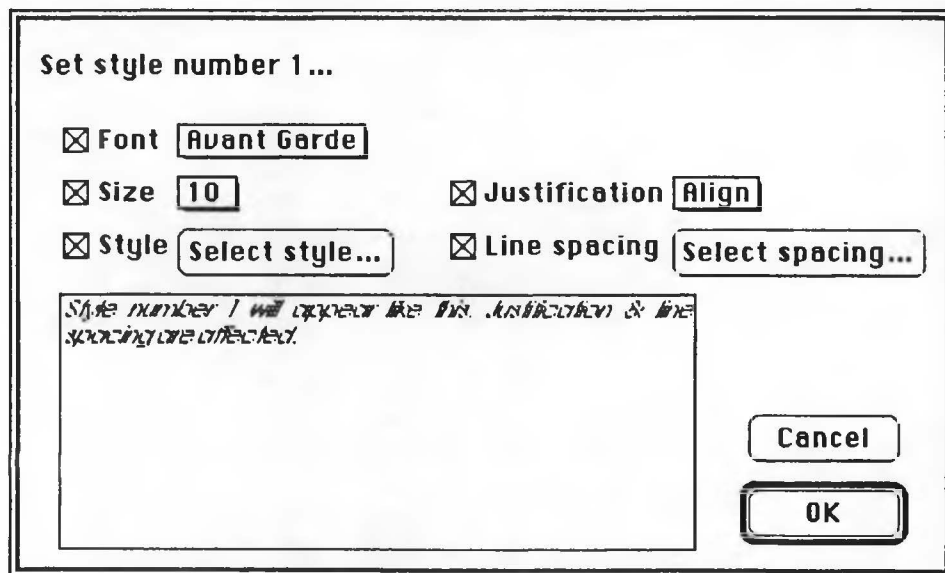
1. Select Show Layout to reveal the boundaries of the headers, footers, and margins.
2. Select Show Messages to display the markers for such things as the changes in paragraph rulers. Those markers appear on the left of the screen.
3. Select Show Invisibles to see the hidden formatting characters like tabs, paragraph breaks, and page breaks.
4. Select Hide Layout, Hide Messages, and Hide Invisibles to hide each of these.
5. Select Hide Pictures to hide the pictures you have pasted in the document and, consequently, to scroll through the document faster. Show Pictures is the usual way to set this command.

A few extra features

Style 1 and Style 2

Let's suppose you have to type several quotes in your text and want them to appear in 9 point, italic, Helvetica font with both margins justified.

1. Pull down the File menu to Doc Preferences... and release the mouse button. That opens the Document Preferences... window.
2. Click on Style 1. That opens the following window.



3. Click in the box beside Font if it does not already contain an x and press on the font name to its right, currently Avant Garde, to open a pop-up menu where you drag to choose Helvetica.
4. Click the box beside Size if it does not already contain an x and click on the number to its right, currently 10, to open a pop-up menu where you choose 9.
5. Click the box beside Style if it does not already contain an x and click on Select style to open a pop-up menu where you choose Italic.
6. Click the box beside Justification if it does not already contain an x and press the box beside it to open a pop-up menu where you choose Align. Notice that an illustration of your choices appears in the rectangular box in

the window. The text on the screen will be clearer when printed.

7. Click OK to accept your choices or Cancel to reject them.

8. Click OK to close the Document Preferences... window.

9. Pull down the Style menu to Style 1 and release the mouse.

That chooses Style 1, and text that you type should appear in nine point, Helvetica, italic style with both margins justified, just like this text. Some words in this paragraph should have additional spaces inserted between them in order to justify both margins.

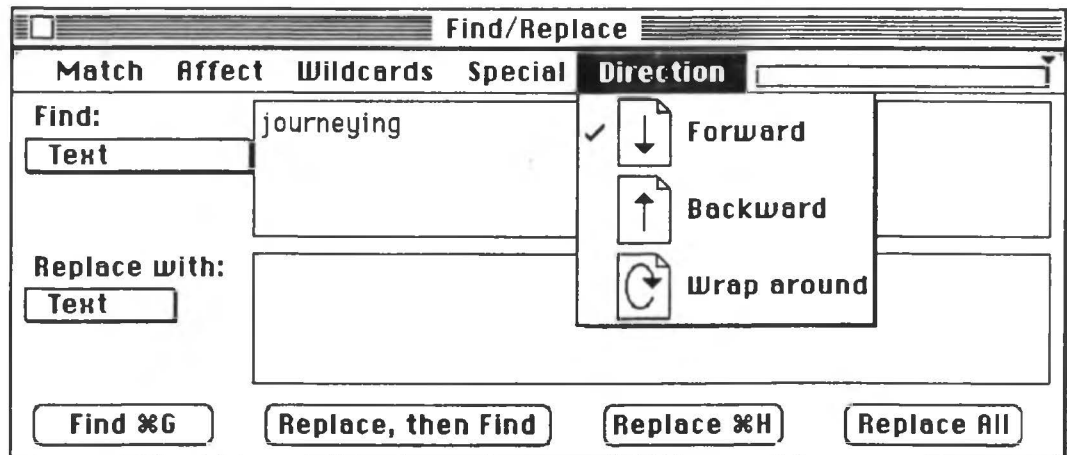
10. Pull down the Style menu to Last Style to return to the text style you were using previously. This feature saves time by letting you access two styles that you use often.

Find/Replace

Find/Replace locates a string of text, a word, hidden formatting characters such as the end-of-paragraph symbol, or a tab marker. A search can even ignore the text and locate a particular font, size, or style. Finally, you can search in two directions from the blinking cursor, forward or backward. Let's search backward from the second paragraph of Morris Bishop's text.

1. Place the blinking insertion point at the beginning of the second paragraph, just before the word "Northwestward."

2. Pull down the Edit menu to Find/Replace. That opens the Find/Replace window below.



3. Press on the word "Direction" and drag to Backward on the pull-down menu that appears.

4. Type the word "journeying" in the Find dialog box where the blinking insertion point is now located.

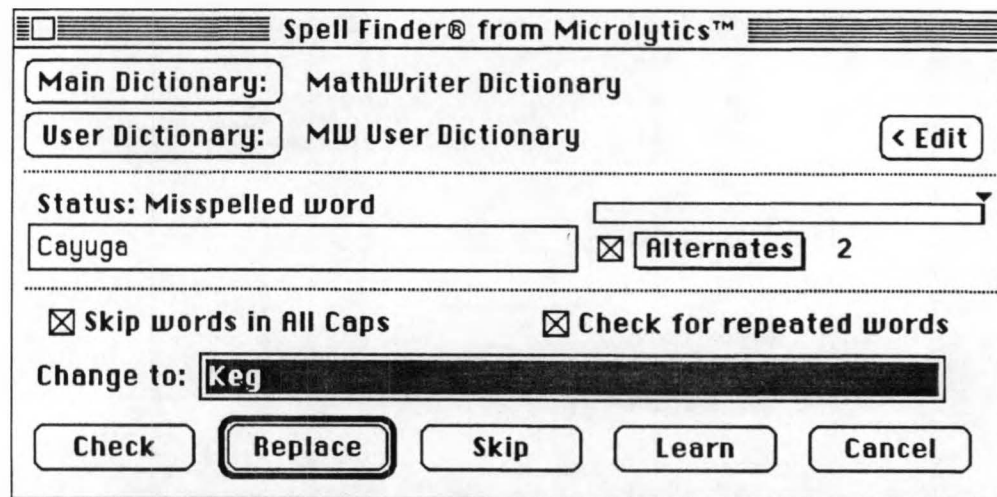
Let's assume that you want to replace the word "journeying" with the word "traveling."

5. Click in the dialog box beside Replace with: and type the word "traveling" in your document.
6. Click the Find button at the bottom of the window to initiate a search backward for the word "journeying." *MathWriter* finds the word "journeying" and highlights it.
7. Click the Replace button at the bottom of the screen. The program replaces "journeying" with "traveling".
8. To remove the Find/Replace window, click the small white box, the "Go away box," in the upper left corner of the window.

Checking spelling

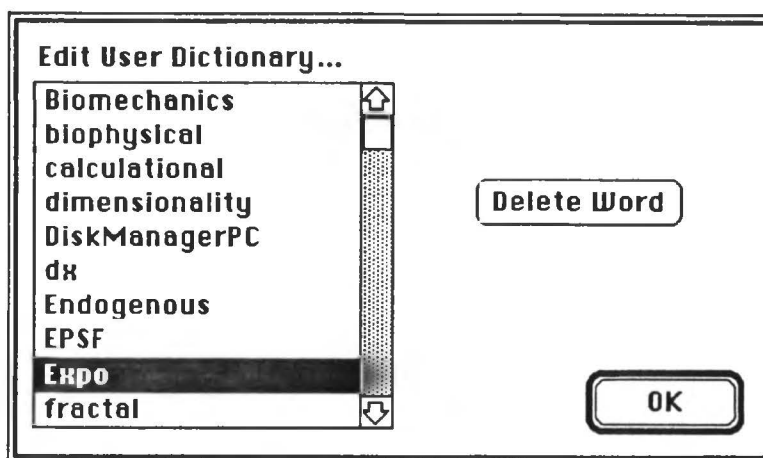
To search for misspelled words:

1. Place the blinking insertion point at the beginning of the Morris Bishop paragraph.
2. Pull down the Edit menu to Check Spelling. The following window appears:



3. Click the Check button at the bottom of the screen, and the program checks the spelling of your text, stopping on the word "Cayuga" which is not in its dictionary. In the dialog box beside Change to, notice that *MathWriter* has placed the word "Keg" which it supposes is what you meant to write.

4. Click on the Alternates box for a list of other possible alternates.
5. Click the Learn button if you want to add Cayuga to the list of correctly spelled words.
6. If you want to delete that word from the list, click Edit to open the following window, in which you can edit the User Dictionary. The word "Cayuga" should now appear in that list. Highlight the word "Cayuga" and click Delete Word.



7. Click OK to return to the Check Spelling window.
 8. If you do not want the program to learn the word "Cayuga," click Skip.
- Notice that the boxes beside Skip words in All Caps and Check for repeated words are checked. *MathWriter* automatically skips words that are in all capitals and checks for words you might have inadvertently typed twice. Click in the boxes beside Skip words in All Caps and Check for repeated words if you want to remove those options for this document.
9. Click Cancel to return to your document.

Word count

To find out the number of words in your paper:

1. Pull down the File menu to Doc Info... . This opens the following window.

Abstract/Notes:			
Sessions:	13		
Creation date:	02/19/90, 6:04:36 PM		
Modification date:	09/06/90, 10:19:39 AM		
Size on disk:	19,695 bytes (19K)		
<hr/>			
Pages:	3	Characters	
Paragraphs:	29	on base line:	3827
Lines:	84	in sub-expressions:	435
Words:	735	containing sub-expressions:	22
Memos:	0	Total:	4262
<hr/>			
Unique rulers:	6		
Unique styles:	14		
Style runs:	108		
			OK

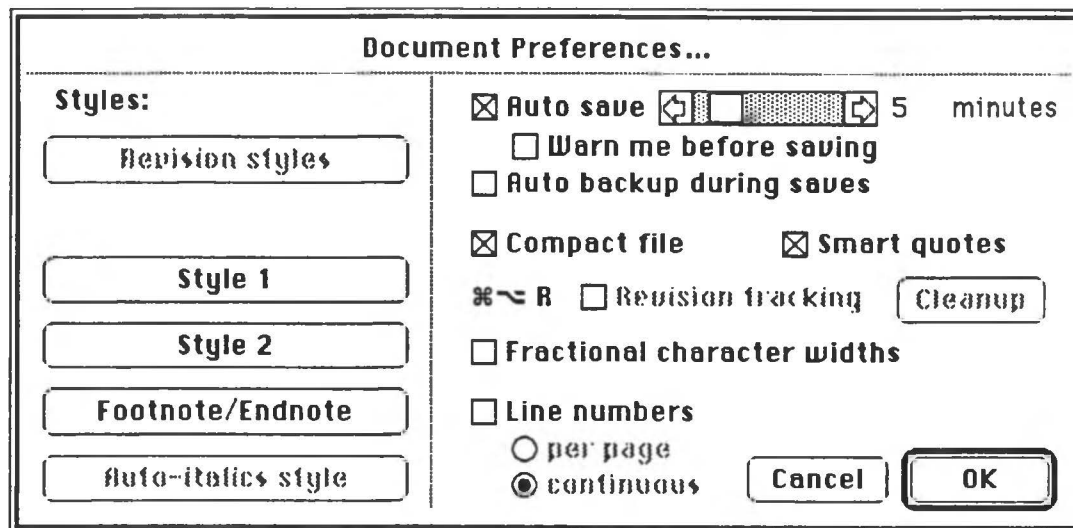
Near the middle of the page appears the number of pages, paragraphs, lines, and words. You can see the other information available in this window.

2. Click OK to close the Doc Info... window.

Line numbering

Writing and editing is sometimes easier if the lines of text are numbered. To number text lines:

1. Pull down the File menu to Doc Preferences... and release the mouse. This opens the Document Preferences... window below:



2. Click in the box beside Line numbers.
3. Click the button beside per page if you want numbering to begin anew with each page or the button beside continuous if you want numbering to be continuous throughout.
4. Click OK to accept your choices or Cancel to reject them.


Inserting graphics

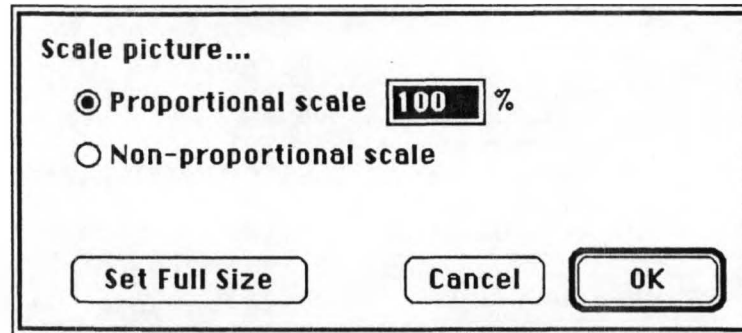
With *MathWriter* you can insert graphics into your text or onto the Clipboard. However, unless you know how to put a graphic in the Scrapbook, just skip this section on graphics.

1. Place the blinking insertion point in your document where you want the graphic to appear.
2. Open the Scrapbook and select a graphic.
3. Pull down the Edit menu to Copy and release the mouse to place a copy of the graphic on the Clipboard.
4. Pull down the Edit menu to Paste Picture and release the mouse. This pastes the graphic in your document at the insertion point.

Sizing the graphic


To scale the graphic by menu:

1. Click on the arrow tool  in the Tools window.
2. Pull down the Edit menu to Scale Picture... . This opens the following window.




3. Click Proportional scale and type the percent you want the graphic increased or reduced in size relative to its original size. If it is already 100%, it cannot grow larger.
4. Click OK to accept your choices.
5. Click the I-beam cursor in the Tools window to return to the text editor.

To scale the graphic by mouse:

1. Click the arrow cursor  in the Tools window. This places a frame around the graphic with small boxes in the corners.
2. Place the arrow cursor in one of the small boxes, press the *option* key, and drag the box to change the size of the graphic without disturbing the width to height ratio.
3. Click the I-beam cursor in the Tools window to return to the text editor.

Moving the graphic up or down:

1. Click the arrow cursor  in the Tools window to select the character editor.
2. Click on the graphic and release. This places a frame around the graphic.
3. Place the arrow cursor in the frame and drag the graphic up or down.
4. Click the I-beam cursor in the Tools window to return to the text editor.

Clean Up Windows

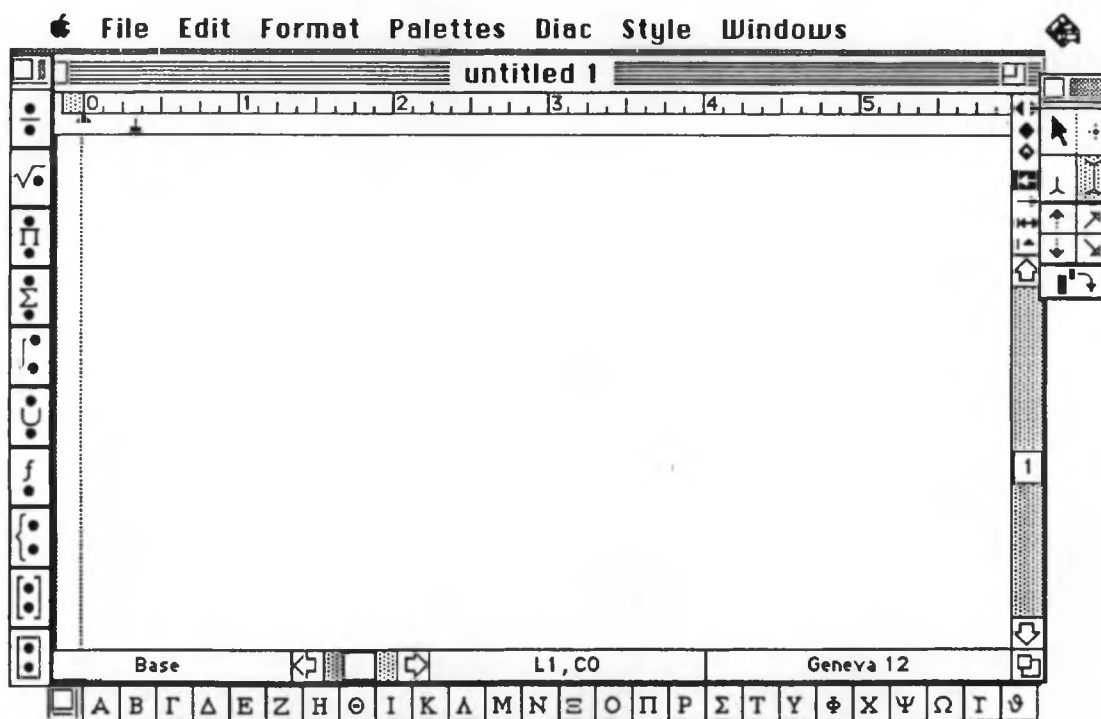
- ◆ If you have several windows open at once, pull down the Window menu to Clean Up Windows and release the mouse to “stack” the window with a slight offset. This lets you easily click the one you want and bring it to the front of the screen. You can select a document to become the active window by clicking on an exposed portion of the window. You can also pull down the Windows menu and select a file if its name appears at the end of the Windows menu.

Writing mathematical expressions

Tools, Templates, and Palettes Windows

MathWriter provides three windows that are important in writing mathematics, the Tools window, the Templates window, and the Palettes window. They are called floating windows because you can place them on the screen where you want them while your document window is open. To position these windows:

- ◆ Pull down the Windows menu to Tools window and release the mouse. This places the Tools window in the upper right corner of the screen. On the same menu and in the same way, choose Templates window and Palettes window. This places these two additional windows on the screen on the left side and across the bottom. Your screen should look like this:



To reposition these windows:

- ◆ Place the arrow cursor in the gray space in the upper right corner of the window or, in the case of the Palettes window, to the left of the window, press the mouse, and drag the window where you want it.

You can move characters from the Palettes menu into the Palettes window, making them easier to reach. To do this:

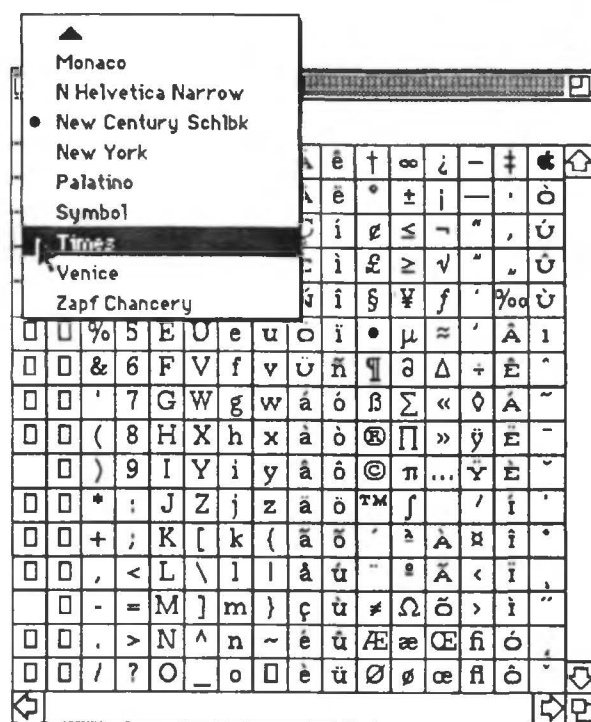
- ◆ With the Palettes window open, pull down the Palettes menu to Operators and release the mouse. This places that line of characters in the Palettes window. To remove Operators from the Palettes window, pull down the Palettes menu and release the mouse.

To remove these windows from the screen, click in the small white box in the upper left corner of each window.

Font Table Window

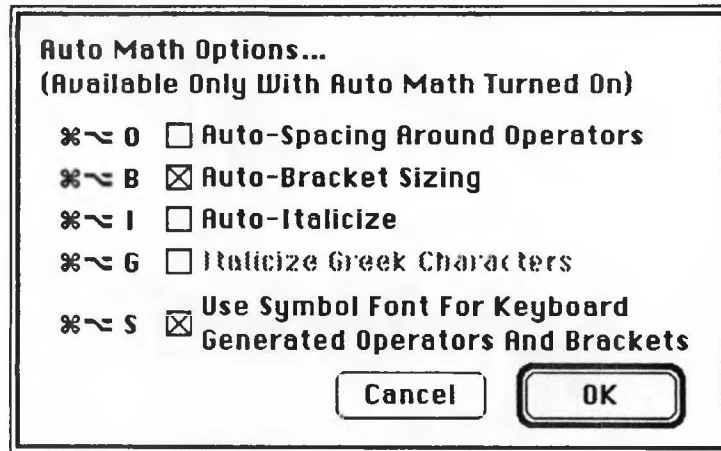
A fourth floating window, the Font Table window, can be placed on the screen in the same way; however, since this is a large window, you may want to open it only when you need it rather than placing it on the screen. Click on the re-size box at bottom right corner of the Font Table Window and drag to make the window smaller. This window has a pop-up menu that lets you select among several different fonts. Each font contains a variety of symbols as well as numbers and letters.

- ◆ Press and drag the mouse on the font name in the upper left corner to open the pop-up menu shown on the following font table.



Auto Math and Auto Math Options...

1. Pull down the Style menu to Auto Math Options... and release the mouse. That opens the following window.



2. Click the boxes beside those options you want to activate. Auto-spacing around operators automatically places a space around such things as a plus or a minus sign. Auto-bracket sizing automatically stretches brackets to fit an equation. Auto-italicize automatically italicizes the variables in equations without italicizing the constants and the functions. Use Symbol font for keyboard generated operators automatically replaces such things as a plus sign from one font with a plus sign from the better-formed Symbol font.

3. Click OK to accept your choices or Cancel to reject them. Now you have chosen the Auto Math options you want, but you have to click Auto Math to enable the options you selected.

4. Click Auto Math.

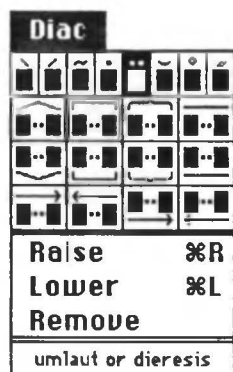
5. Re-select Auto Math to disable it when you are not entering or editing an equation.

Diac

This menu of diacriticals remains dimmed until you place the cursor immediately to the right of an alphabetical character. Then the top row becomes available. The name of the diacritic on which the cursor rests appears in the row at the bottom of the window.

1. Place the blinking insertion point immediately to the right of an alphabetical character.

2. Pull down the Diac menu which looks similar to the following:



3. Click the diacritical you want.

4. Click the Raise and Lower commands to adjust the height of the diacritical.

5. Click Remove to remove the diacritic.


6. Highlight or select a group of characters to enable the remaining diacritics. *MathWriter* automatically stretches the overbars, underbars, and grouping brackets.


7. Click the split I-beam on the Tools Window to edit within these structures.

8. Select or highlight one of these structures before using the Raise, Lower, and Remove commands.



Typing an equation

To illustrate how to type an equation, let's use the quadratic equation.

1. Make sure your text is left justified. If it is, the left justified arrow  in the Paragraph alignment box is highlighted. If not, click on that arrow.

2. Drag a center tab  from the Tab well to the three inch mark on the ruler and tab to it.

3. Type "x."

4. Click the split I beam cursor  in the Tools window and then the  arrow in the Tools window. This places a tiny triangle, the equation insertion point, at the lower right of the x, ready for inserting the subscript.

$$x_{\bullet}$$


5. Type the subscript: "1,2". Notice the subscript font is smaller than the x. Your equation now looks like this:

$$x_{1,2}$$

6. Press *enter* to return to the main line of text and press space bar. If you accidentally press *return* rather than *enter*, press the *option* key to reposition the insertion point within the mathematical structure.

7. Click "=" from the Operators line in the Palettes window and press space bar.

$$x_{1,2} =$$

8. Press on the fraction icon at the top of the Templates window and drag the mouse to the first fraction template of the pop-out  menu and release.

$$x_{1,2} = -$$

9. Click "-" in the Operators line in the Palettes window. The minus character from the Operators line looks better than a hyphen. Press space bar, type "b", and press space bar again. Notice that the fraction bar grows automatically as you enter characters.

$$x_{1,2} = \frac{-b}{}$$

10. Click "±" in the Operators line in the Palettes window and press space bar.


$$x_{1,2} = \frac{-b \pm}{}$$

11. Press the square root icon in the Templates window, drag to the first square root symbol on the pop-out menu, and release the mouse.

$$x_{1,2} = \frac{-b \pm \sqrt{}}{}$$

12. Type the letter "b". The square root template grows as you type.

$$x_{1,2} = \frac{-b \pm \sqrt{b}}{}$$

13. Click the  arrow on the Tools window to position the insertion point for the superscript.

14. Type "2". Notice that the superscript font automatically appears smaller than the b.

$$x_{1,2} = \frac{-b \pm \sqrt{b^2}}{2a}$$

15. Press *enter* to leave the superscript level.

16. Click "-" from the floating Palettes window and type "4 a c," pressing the space bar between each symbol. The square root and fraction symbols continue to grow automatically.

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

17. Press *enter* twice, once to exit the square root template and once to exit the numerator and move to the denominator of the fraction template.


18. Enter "2 a", pressing space bar between the "2" and "a".

$$x_{1,2} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

19. Press *enter*. Your equation is complete, but it does not have an equation number.



Numbering an equation

MathWriter lets you number equations easily and keeps up with the sequencing for you. To give this quadratic equation the number "[1]":

1. Place a left justify tab  on the ruler at the five inch mark or wherever you want the equation number.


2. Place the blinking insertion point at the end of the equation.

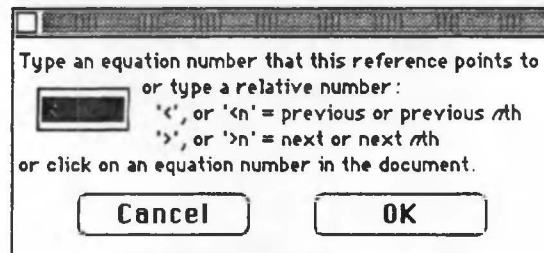
3. Press *tab* to move the cursor to the place you want the equation number.

4. Pull down the Palettes menu to equation #  and release the mouse. *MathWriter* then inserts "[1]" into your document. After you type the second equation, tab to the five inch mark, click on equation #  in the Palettes menu, and *MathWriter* inserts "[2]" after the second equation at the five inch mark.

Equation reference numbers

MathWriter lets you assign reference numbers to equations in the text. To assign an equation reference number:


1. Type "I want to refer to equation".
2. Press space bar.
3. Pull down the Palettes menu to Variables and select equation reference  from the Variables row. The following window opens.



4. Type "1" in the highlighted box in that window.
5. Click OK.
6. MathWriter inserts "[1]" into your text after the word "equation" and establishes a linkage between the equation number and its text reference. If you put another equation in front of equation [1], equation [1] would become equation [2] and its text reference also would change to [2].

Correcting an error in a mathematical expression





Let's introduce an error into the quadratic equation and correct it.

1. Click on the split I-beam math editor  in the Tools window.
2. Highlight or select the subscript "2" in $x_{1,2}$.
3. Type "3", making the expression read $x_{1,3}$.
4. Highlight it again and type "2" to return the expression to its correct form.

Creating a table

To create a table:

1. Place the blinking insertion point in your text at the place where you want a table. You can use any of the templates in the last row of the Template window to create tables.

2. Select the last template  on the last row in the Template window. That places a box in your document containing a flashing dot. 
3. Type "1" and press *return* to create a new row. 
4. Type "2" and press *tab* to create a new column.
5. Continue typing the contents of the table, pressing *return* to create a new row and *tab* to create a new column.
6. Click on the split I-beam  in the Tools window to edit within a cell in the table.

